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IEEE JNL IEEE Journal or Magazine

IEEE JNL IEEE Journal or Magazine

IEEE CNF IEEE Conference Proceeding

IEEE CNF IEEE Conference Proceeding

IEEE STD IEEE Standard

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 Ueta, T.; Kawakami, H.; Yoshinaga, T.; Katsuta, Y.;
[Circuits and Systems, 1997. ISCAS '97. Proceedings of 1997 IEEE International](#)
 Volume 2, 9-12 June 1997 Page(s):801 - 804 vol.2
 Digital Object Identifier 10.1109/ISCAS.1997.621834
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 Melody, J.; Basar, T.; Bullo, F.;
[Automatic Control, IEEE Transactions on](#)
 Volume 48, Issue 1, Jan. 2003 Page(s):139 - 143
 Digital Object Identifier 10.1109/TAC.2002.806667
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- ☐ 3. **A spectral quadratic-SDP method with applications to fixed-order H/sub 2**
infin/ synthesis
 Apkarian, P.; Noll, D.; Thevenet, J.-B.; Hoang Duong Tuan;
[Control Conference, 2004. 5th Asian](#)
 Volume 2, 20-23 July 2004 Page(s):1337 - 1345 Vol.2
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- ☐ 4. **On nonlinear controllability of homogeneous systems linear in control**
 Melody, J.W.; Basar, R.; Bullo, R.;
[Decision and Control, 2000. Proceedings of the 39th IEEE Conference on](#)
 Volume 4, 12-15 Dec. 2000 Page(s):3971 - 3976 vol.4
 Digital Object Identifier 10.1109/CDC.2000.912335
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- ☐ 5. **A new approach to fuzzy modeling and control of discrete-time systems**
 Margaliot, M.; Langholz, G.;
[Fuzzy Systems, IEEE Transactions on](#)
 Volume 11, Issue 4, Aug. 2003 Page(s):486 - 494
 Digital Object Identifier 10.1109/TFUZZ.2003.814836

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- ☐ **6. A better scaled local tangent space alignment algorithm**
Jian Yang; Fuxin Li; Jue Wang;
[Neural Networks, 2005. IJCNN '05. Proceedings. 2005 IEEE International Joint](#)
Volume 2, 31 July-4 Aug. 2005 Page(s):1006 - 1011 vol. 2
[AbstractPlus](#) | Full Text: [PDF\(2550 KB\)](#) [IEEE CNF](#)
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- ☐ **7. Control of spacecraft via nonlinear H_∞ method**
Kang, W.;
[Decision and Control, 1994.. Proceedings of the 33rd IEEE Conference on](#)
Volume 1, 14-16 Dec. 1994 Page(s):921 - 926 vol.1
Digital Object Identifier 10.1109/CDC.1994.410941
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- ☐ **8. Influence of the sensor location on the practical observability of distributed bioreactors**
Tali-Maamar, N.; Babary, J.P.; Dochain, D.;
[Control, 1994. Control '94. Volume 1.. International Conference on](#)
21-24 Mar 1994 Page(s):255 - 260 vol.1
[AbstractPlus](#) | Full Text: [PDF\(320 KB\)](#) [IEEE CNF](#)
- ☐ **9. Calculating Lyapunov exponents from a time series**
Darbyshire, A.G.;
[Exploiting Chaos in Signal Processing. IEE Colloquium on](#)
6 Jun 1994 Page(s):2/1 - 2/6
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1 [Deformable models: Real-Time subspace integration for St. Venant-Kirchhoff](#)



[deformable models](#)

Jernej Barbič, Doug L. James

July 2005 **ACM Transactions on Graphics (TOG)**, Volume 24 Issue 3**Publisher:** ACM PressFull text available: [pdf\(573.05 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this paper, we present an approach for fast subspace integration of reduced-coordinate nonlinear deformable models that is suitable for interactive applications in computer graphics and haptics. Our approach exploits dimensional model reduction to build reduced-coordinate deformable models for objects with complex geometry. We exploit the fact that model reduction on large deformation models with *linear* materials (as commonly used in graphics) result in internal force models that are s ...

Keywords: animation, deformation, finite element method, haptics, interactive, model reduction, precomputation, simulation

2 [Level set and PDE methods for computer graphics](#)



David Breen, Ron Fedkiw, Ken Museth, Stanley Osher, Guillermo Sapiro, Ross Whitaker

August 2004 **Proceedings of the conference on SIGGRAPH 2004 course notes GRAPH '04****Publisher:** ACM PressFull text available: [pdf\(17.07 MB\)](#) Additional Information: [full citation](#), [abstract](#)

Level set methods, an important class of partial differential equation (PDE) methods, define dynamic surfaces implicitly as the level set (iso-surface) of a sampled, evolving nD function. The course begins with preparatory material that introduces the concept of using partial differential equations to solve problems in computer graphics, geometric modeling and computer vision. This will include the structure and behavior of several different types of differential equations, e.g. the level set eq ...

3 [D-C and transient analysis of networks using a digital computer](#)



F. H. Branin

June 1988 **Papers on Twenty-five years of electronic design automation****Publisher:** ACM PressFull text available: [pdf\(1.86 MB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)

4 Research papers: spatial and high-dimensional data: CURLER: finding and visualizing nonlinear correlation clusters



Anthony K. H. Tung, Xin Xu, Beng Chin Ooi

June 2005 **Proceedings of the 2005 ACM SIGMOD international conference on Management of data**

Publisher: ACM Press

Full text available: pdf(2.38 MB) Additional Information: [full citation](#), [abstract](#), [references](#)

While much work has been done in finding linear correlation among subsets of features in high-dimensional data, work on detecting nonlinear correlation has been left largely untouched. In this paper, we present an algorithm for finding and visualizing nonlinear correlation clusters in the subspace of high-dimensional databases. Unlike the detection of linear correlation in which clusters are of unique orientations, finding nonlinear correlation clusters of varying orientations requires merging cl ...

5 Color science and color appearance models for CG, HDTV, and D-CINEMA



Charles Poynton, Garrett Johnson

August 2004 **Proceedings of the conference on SIGGRAPH 2004 course notes GRAPH '04**

Publisher: ACM Press

Full text available: pdf(1.46 MB) Additional Information: [full citation](#), [abstract](#)

This course introduces the science behind image digitization, tone reproduction, and color reproduction in computer generated imagery (CGI), HDTV, and digital cinema (D-cinema). We detail how color is represented and processed as images are transferred between these domains. We detail the different forms of nonlinear coding ("gamma") used in CGI, HDTV, and D-cinema. We explain why one system's RGB does not necessarily match the RGB of another system. We explain color specification ...

6 The elements of nature: interactive and realistic techniques



Oliver Deussen, David S. Ebert, Ron Fedkiw, F. Kenton Musgrave, Przemyslaw Prusinkiewicz, Doug Roble, Jos Stam, Jerry Tessendorf

August 2004 **Proceedings of the conference on SIGGRAPH 2004 course notes GRAPH '04**

Publisher: ACM Press

Full text available: pdf(17.65 MB) Additional Information: [full citation](#), [abstract](#)

This updated course on simulating natural phenomena will cover the latest research and production techniques for simulating most of the elements of nature. The presenters will provide movie production, interactive simulation, and research perspectives on the difficult task of photorealistic modeling, rendering, and animation of natural phenomena. The course offers a nice balance of the latest interactive graphics hardware-based simulation techniques and the latest physics-based simulation techni ...

7 Collision detection and proximity queries



Sunil Hadap, Dave Eberle, Pascal Volino, Ming C. Lin, Stephane Redon, Christer Ericson

August 2004 **Proceedings of the conference on SIGGRAPH 2004 course notes GRAPH '04**

Publisher: ACM Press

Full text available: pdf(11.22 MB) Additional Information: [full citation](#), [abstract](#)

This course will primarily cover widely accepted and proved methodologies in collision detection. In addition more advanced or recent topics such as continuous collision detection, ADFs, and using graphics hardware will be introduced. When appropriate the methods discussed will be tied to familiar applications such as rigid body and cloth

simulation, and will be compared. The course is a good overview for those developing applications in physically based modeling, VR, haptics, and robotics.

8 Real-time shading



Marc Olano, Kurt Akeley, John C. Hart, Wolfgang Heidrich, Michael McCool, Jason L. Mitchell, Randi Rost

August 2004 **Proceedings of the conference on SIGGRAPH 2004 course notes GRAPH '04**

Publisher: ACM Press

Full text available: [pdf\(7.39 MB\)](#) Additional Information: [full citation](#), [abstract](#)

Real-time procedural shading was once seen as a distant dream. When the first version of this course was offered four years ago, real-time shading was possible, but only with one-of-a-kind hardware or by combining the effects of tens to hundreds of rendering passes. Today, almost every new computer comes with graphics hardware capable of interactively executing shaders of thousands to tens of thousands of instructions. This course has been redesigned to address today's real-time shading capabili ...

9 Dynamics of solids: Fast frictional dynamics for rigid bodies



Danny M. Kaufman, Timothy Edmunds, Dinesh K. Pai

July 2005 **ACM Transactions on Graphics (TOG)**, Volume 24 Issue 3

Publisher: ACM Press

Full text available: [pdf\(498.82 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We describe an efficient algorithm for the simulation of large sets of non-convex rigid bodies. The algorithm finds a simultaneous solution for a multi-body system that is linear in the total number of contacts detected in each iteration. We employ a novel contact model that uses mass, location, and velocity information from all contacts, at the moment of maximum compression, to constrain rigid body velocities. We also develop a new friction model in the configuration space of rigid bodies. Thes ...

Keywords: contact, friction, non-smooth dynamics, rigid bodies

10 A review of vessel extraction techniques and algorithms



Cemil Kirbas, Francis Quek

June 2004 **ACM Computing Surveys (CSUR)**, Volume 36 Issue 2

Publisher: ACM Press

Full text available: [pdf\(8.06 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Vessel segmentation algorithms are the critical components of circulatory blood vessel analysis systems. We present a survey of vessel extraction techniques and algorithms. We put the various vessel extraction approaches and techniques in perspective by means of a classification of the existing research. While we have mainly targeted the extraction of blood vessels, neurovascular structure in particular, we have also reviewed some of the segmentation methods for the tubular objects that show ...

Keywords: Magnetic resonance angiography, X-ray angiography, medical imaging, neurovascular, vessel extraction

11 A Linear-Centric Modeling Approach to Harmonic Balance Analysis

P. Li, L. Pileggi

March 2002 **Proceedings of the conference on Design, automation and test in Europe**

Publisher: IEEE Computer Society

Full text available: [pdf\(221.12 KB\)](#)

[Publisher Site](#)Additional Information: [full citation](#), [abstract](#)

In this paper we propose a new harmonic balance simulation methodology based on a linear-centric modeling approach. A linear circuit representation of the nonlinear devices and associated parasitics is used along with corresponding time and frequency domain inputs to solve for the nonlinear steady-state response via successive chord (SC) iterations. For our circuit examples this approach is shown to be up to 60x more run-time efficient than traditional Newton-Raphson (N-R) based iterative methods, while ...

12 [GPGPU: general purpose computation on graphics hardware](#)



David Luebke, Mark Harris, Jens Krüger, Tim Purcell, Naga Govindaraju, Ian Buck, Cliff Woolley, Aaron Lefohn

August 2004 **Proceedings of the conference on SIGGRAPH 2004 course notes GRAPH '04**

Publisher: ACM Press

Full text available: [pdf\(63.03 MB\)](#) Additional Information: [full citation](#), [abstract](#)

The graphics processor (GPU) on today's commodity video cards has evolved into an extremely powerful and flexible processor. The latest graphics architectures provide tremendous memory bandwidth and computational horsepower, with fully programmable vertex and pixel processing units that support vector operations up to full IEEE floating point precision. High level languages have emerged for graphics hardware, making this computational power accessible. Architecturally, GPUs are highly parallel s ...

13 [Projectors: advanced graphics and vision techniques](#)



Ramesh Raskar

August 2004 **Proceedings of the conference on SIGGRAPH 2004 course notes GRAPH '04**

Publisher: ACM Press

Full text available: [pdf\(6.53 MB\)](#) Additional Information: [full citation](#)

14 [NURBS-based Galerkin method and application to skeletal muscle modeling](#)



Xianlian Zhou, Jia Lu

June 2005 **Proceedings of the 2005 ACM symposium on Solid and physical modeling**

Publisher: ACM Press

Full text available: [pdf\(1.04 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Non-Uniform Rational B-spline (NURBS) is often used to construct the free-form boundary representation of three-dimensional objects. In this paper, we propose a method for mechanical analysis for deformable bodies by combining NURBS geometric representation and the Galerkin method. The NURBS surface bounding a 3D body is extended to a trivariate NURBS solid by adding another parametric domain represented by additional control points. The displacement field of the body is constructed using the NU ...

Keywords: NURBS solid, finite element method, physically based deformable body modeling

15 [Stability analysis and design of the second-order congestion control for networks with heterogeneous delays](#)



Yu-Ping Tian

October 2005 **IEEE/ACM Transactions on Networking (TON)**, Volume 13 Issue 5

Publisher: IEEE Press

Full text available: [pdf\(405.64 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper addresses the problem of the stability of congestion control for networks with heterogeneous round-trip communication delays. We present a frequency-domain approach to this problem. The approach is based on the analysis of the clockwise property of system transfer functions, generalized Nyquist stability criterion, and a recent lemma of Vinnicombe. We point out that a prerequisite for establishing decentralized stability criteria for distributed congestion control is that the Nyquist ...

Keywords: congestion control, heterogeneous delays, internet, stability

16 Denoising Source Separation

Jaakko Särelä, Harri Valpola

September 2005 **The Journal of Machine Learning Research**, Volume 6

Publisher: MIT Press

Full text available:  [pdf\(1.95 MB\)](#) Additional Information: [full citation](#), [abstract](#)

A new algorithmic framework called denoising source separation (DSS) is introduced. The main benefit of this framework is that it allows for the easy development of new source separation algorithms which can be optimised for specific problems. In this framework, source separation algorithms are constructed around denoising procedures. The resulting algorithms can range from almost blind to highly specialised source separation algorithms. Both simple linear and more complex nonlinear or adaptive ...

17 Kernel independent component analysis

Francis R. Bach, Michael I. Jordan

March 2003 **The Journal of Machine Learning Research**, Volume 3

Publisher: MIT Press

Full text available:  [pdf\(561.46 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We present a class of algorithms for independent component analysis (ICA) which use contrast functions based on canonical correlations in a reproducing kernel Hilbert space. On the one hand, we show that our contrast functions are related to mutual information and have desirable mathematical properties as measures of statistical dependence. On the other hand, building on recent developments in kernel methods, we show that these criteria and their derivatives can be computed efficiently. Minimize ...

Keywords: Stiefel manifold, blind source separation, canonical correlations, gram matrices, incomplete Cholesky decomposition, independent component analysis, integral equations, kernel methods, mutual information, semiparametric models

18 Denoising Source Separation

Jaakko Särelä, Harri Valpola

April 2005 **The Journal of Machine Learning Research**, Volume 6

Publisher: MIT Press

Full text available:  [pdf\(2.02 MB\)](#) Additional Information: [full citation](#), [abstract](#)

A new algorithmic framework called denoising source separation (DSS) is introduced. The main benefit of this framework is that it allows for the easy development of new source separation algorithms which can be optimised for specific problems. In this framework, source separation algorithms are constructed around denoising procedures. The resulting algorithms can range from almost blind to highly specialised source separation algorithms. Both simple linear and more complex nonlinear or adaptive ...

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Control system development tools



Scott Kimbrough

January 1987 **ACM SIGAPL APL Quote Quad , Proceedings of the international conference on APL: APL in transition APL '87**, Volume 17 Issue 4**Publisher:** ACM PressFull text available: [pdf\(1.17 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper provides a core of APL algorithms for control system development and demonstrates their use by solving a typical control problem. In doing so it outlines useful numerical techniques for simulating dynamic systems and for solving some of the central equations of control theory. Although some sections of the paper are addressed to APL2 users, the majority of the paper applies to APL. Moreover, by doing a little extra work to handle complex numbers and by installing a &ld ...

20 [Numerical computations: its nature and research directions](#)

J. R. Rice, C. W. Gear, J. Ortega, B. Parlett, M. Schultz, L. F. Shampine, P. Wolfe, J. F. Traub
February 1979 **ACM SIGNUM Newsletter**, Volume 14 Issue si-1**Publisher:** ACM PressFull text available: [pdf\(4.43 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

This report on research in numerical computation is part of the Computer Science and Engineering Research Study (COSERS) which is aimed at technically educated people outside the Computer Science field. This goal led the panel to face many difficult choices between precise, but excessively technical, descriptions and looser, but more accessible expositions. The panel hopes that all readers will keep this in mind.

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